

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this application:

Claim 1 (original): A method for hermetically sealing an optical fiber comprising:

- (a) providing an optical fiber;
- (b) providing a transition bushing having a first section and a second section, the first and second sections of the transition bushing having different physical properties; and
- (c) mounting the fiber in the transition bushing;

wherein the first and second sections of the transition bushing have different coefficients of thermal expansion.

Claim 2 (original): The method of claim 1, wherein step (c) comprises:

- (c-1) metallizing the optical fiber; and
- (c-2) soldering the metallized fiber to the transition bushing.

Claim 3 (original): The method of claim 2 wherein the optical fiber is metallized using at least one of plasma deposition and electroplating.

Claim 4 (original): The method of claim 1, wherein step (c) comprises mounting the fiber in the transition bushing using a glass sealing process.

Claim 5 (cancelled).

Claim 6 (original): The method of claim 1, wherein the coefficient of thermal expansion of a section of the transition bushing is matched to the coefficient of thermal expansion of a housing for attachment to the transition bushing.

Claim 7 (original): The method of claim 6, wherein the section with the matching coefficient of thermal expansion and the housing are formed of welding-compatible materials.

Claim 8 (original): The method of claim 6, wherein the section with the matching coefficient of thermal expansion is fashioned from a non-ferrous material.

Claim 9 (original): The method of claim 8, wherein the non-ferrous material is one of a titanium alloy, magnesium alloy, and an aluminum alloy.

Claim 10 (original): The method of claim 1, wherein steps (a)–(c) are performed substantially simultaneously.

Claim 11 (original): The method of claim 1, further comprising mounting the transition bushing in a housing.

Claim 12 (original): The method of claim 11, wherein the transition bushing is mounted in the housing using welding.

Claim 13 (original): The method of claim 11, wherein the transition bushing is mounted in the housing using laser welding.

Claim 14 (original): A method for hermetically sealing an optical fiber comprising:

- (a) providing an optical fiber mounted in a ferrule;
  - (b) providing a transition bushing having a first section and a second section, the first and second sections of the transition bushing having different physical properties; and
  - (c) mounting the ferrule in the transition bushing,
- wherein the first and second sections of the transition bushing have different coefficients of thermal expansion.

Claim 15 (original): The method of claim 14, wherein the ferrule is made of a ferrous alloy.

Claim 16 (original): The method of claim 14, wherein step (c) comprises soldering the ferrule to a section of the transition bushing.

Claim 17 (cancelled).

Claim 18 (original): The method of claim 14, wherein the coefficient of thermal expansion of a section of the transition bushing is matched to the coefficient of thermal expansion of a housing for attachment to the transition bushing.

Claim 19 (original): The method of claim 18, wherein the section with the matching coefficient of thermal expansion and the housing are formed of welding-compatible materials.

Claim 20 (original): The method of claim 18, wherein the section with the matching coefficient of thermal expansion is fashioned from a non-ferrous material.

Claim 21 (original): The method of claim 20, wherein the non-ferrous material is one of a titanium alloy, magnesium alloy, and an aluminum alloy.

Claim 22 (original): The method of claim 14, wherein steps (a)–(c) are performed substantially simultaneously.

Claim 23 (original): The method of claim 14, further comprising mounting the transition bushing in a housing.

Claim 24 (original): The method of claim 23, wherein the transition bushing is mounted in the housing using welding.

Claim 25 (original): The method of claim 23, wherein the transition bushing is mounted in the housing using laser welding.

Claim 26 (original): A hermetically sealed optical fiber comprising:

an optical fiber;

a transition bushing having a first section and a second section, the first and second sections of the transition bushing having different physical properties,

wherein the fiber is mounted in the transition bushing and the first and second sections of the transition bushing have different coefficients of thermal expansion.

Claim 27 (original): The sealed fiber of claim 26, wherein the fiber is mounted in the transition bushing through a solder joint.

Claim 28 (original): The sealed fiber of claim 26, wherein the fiber is mounted in the transition bushing through a glass sealing process.

Claim 29 (cancelled).

Claim 30 (original): The sealed fiber of claim 26, wherein the coefficient of thermal expansion of a section of the transition bushing is matched to the coefficient of thermal expansion of a housing for attachment to the transition bushing.

Claim 31 (original): The sealed fiber of claim 30, wherein the section with the matching coefficient of thermal expansion and the housing are formed of welding-compatible materials.

Claim 32 (original): The sealed fiber of claim 30, wherein the section with the matching coefficient of thermal expansion is fashioned from a non-ferrous material.

Claim 33 (original): The sealed fiber of claim 32, wherein the non-ferrous material is one of a titanium alloy, a magnesium alloy, and an aluminum alloy.

Claim 34 (original): The sealed fiber of claim 26, wherein the transition bushing is mounted in a housing.

Claim 35 (original): The sealed fiber of claim 34, wherein the transition bushing is mounted in the housing using welding.

Claim 36 (original): The sealed fiber of claim 34, wherein the transition bushing is mounted in the housing using laser welding.

Claim 37 (original): A hermetically sealed optical fiber comprising:

an optical fiber mounted in a ferrule;

a transition bushing having a first section and a second section, the first and second sections of the transition bushings having different physical properties,

wherein the ferrule is mounted in the transition bushing and the first and second sections of the transition bushing have different coefficients of thermal expansion.

Claim 38 (original): The sealed fiber of claim 37, wherein the ferrule is made of a ferrous alloy.

Claim 39 (original): The sealed fiber of claim 37, wherein the ferrule is mounted in the transition bushing through a solder joint.

Claim 40 (original): The sealed fiber of claim 37, wherein the ferrule is mounted in the transition bushing through a glass sealing process.

Claim 41 (cancelled).

Claim 42 (original): The sealed fiber of claim 37, wherein the coefficient of thermal expansion of a section of the transition bushing is matched to the coefficient of thermal expansion of a housing for attachment to the transition bushing.

Claim 43 (original): The sealed fiber of claim 42, wherein the section with the matching coefficient of thermal expansion and the housing are formed of welding-compatible materials.

Claim 44 (original): The sealed fiber of claim 43, wherein the section with the matching coefficient of thermal expansion is fashioned from a non-ferrous material.

Claim 45 (original): The sealed fiber of claim 44, wherein the non-ferrous material is at least one of a titanium alloy, a magnesium alloy, and an aluminum alloy.

Claim 46 (original): The sealed fiber of claim 37, wherein the transition bushing is mounted in a housing.

Claim 47 (original): The sealed fiber of claim 46, wherein the transition bushing is mounted in the housing using welding.

Claim 48 (original): The sealed fiber of claim 46, wherein the transition bushing is mounted in the housing using laser welding.